

**An Investigation Into the Feasibility of Using PipsPro Software with Film for Linac QA
R Underwood^{1*}, (1) Radiation Oncology Services, Inc, Atlanta, GA
Presentations**

SU-F-T-493 (Sunday, July 31, 2016) 3:00 PM - 6:00 PM Room: Exhibit Hall

Purpose:

To determine the feasibility of using radiochromic and radiographic film with Pipspro software for quality assurance of linear accelerators with no on-board imaging.

Methods:

The linear accelerator being used is a Varian Clinac 21EX. All IGRT is performed using the BrainLab ExacTrac system. Because of the lack of on board imaging, certain monthly and annual TG-142 quality assurance tests are more difficult to perform and analyze to a high degree of accuracy. Pipspro was not designed to be used with hard film, and to our knowledge its use with film had not been investigated. The film used will be GafChromic EBT3 film and Kodak EDR2 film, scanned with an Epson V700 scanner. The following routine tests will be attempted: MLC picket fence, light vs. radiation field coincidence, starshots, and MLC transmission.

Results:

The only tests that gave accurate and reliable results were the couch, gantry, and collimator starshots. Typical MV and kV images are acquired with a much higher level of contrast between the irradiated and non-irradiated areas when compared to film. Pipspro relies on this level of contrast to be able to automatically detect the fiducial points from its phantom devices, leaf edges for picket fence and transmission tests, and jaw edges for light vs. radiation field tests. Because of this, certain tests gave erroneous results and others were not able to be performed in the software at all, with either type of film. The number of monitor units delivered to the film, the experimental setup, and the scan settings was not able to rectify the problem.

Conclusion:

For linear accelerators with no on-board imaging, it is not recommended to use hard film with PipsPro to perform TG-142 quality assurance tests. Other software or methods should instead be investigated.